

REMARKS

Claims 1-6, 8-10 and 17 have been amended. Claims 1-10, 17 and 18 are pending. Applicant reserves the right to pursue the original claims and other claims in this and in other applications.

The Office Action Summary objects to the Specification (box 9 is checked) but the Office Action does not indicate why the specification is objected to. Accordingly, Applicant traverses the objection and requests clarification.

Claims 1, 2 and 4-6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,821,160 ("Rodriguez"). Applicant traverses the rejection.

Claim 1 recites a semiconductor apparatus and recites, in part, "an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements."

Rodriguez is directed to method of manufacturing a random access memory cell using an etch stop layer to form a fuse. (Rodriguez, Abstract; col. 1, lines 6-9). The Office Action contends that Rodriguez teaches all of the limitations of claim 1. (Office Action, pp. 2-3). Applicant respectfully disagrees. Although the Rodriguez device may have a substrate 12, a NMOS transistor and a resistive element 42, it does not disclose "an electrode pad comprising a metal layer and formed over the semiconductor substrate, said

electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements.” Instead, Rodriguez discloses a metal layer 54 which is etched to form “bond pad areas,” (Rodriguez, col. 6, lines 48-53) and a polysilicon layer 42 which may be used to form a thin resistor element. (Rodriguez, col. 5, lines 28-29, 34-36). The figures in Rodriguez do not illustrate the “bond pads.” Further, Rodriguez does not disclose a “plurality of resistive elements” or a bond pad area that is formed over a plurality of resistive elements. It merely discloses a polysilicon layer 42, which may be used as a resistive element, over nitride spacers 40. (Rodriguez, FIG. 7; col. 5, lines 25-28).

In contrast, the claimed invention has an electrode pad formed over a plurality of resistive elements 9. Such a construction, as in the claimed invention, has several advantages over conventional devices - the area of the semiconductor device is reduced; prevents contamination of the resistive elements by ion impurities, charges, moisture; and stabilizes the resistance values of the resistive elements. (paragraphs [0076]-[0080]). Because Rodriguez does not disclose, teach or suggest all of the limitations of claim 1, Applicant respectfully submits that the 35 U.S.C. § 102(b) rejection of independent claim 1 and dependent claims 2 and 4-6 be withdrawn and the claims allowed.

Claims 1-4 and 17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,369,409 (“Takasu”). Applicant traverses the rejection.

Claim 1 recites a semiconductor apparatus and recites, in part, “an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements.”

Takasu is directed to a semiconductor device having a bleeder resistance circuit and a method of making the device. (Takasu, Abstract; col. 1, lines 5-8). The Office Action contends that Takasu teaches all of the limitations of claim 1. (Office Action, p.4). Applicant respectfully disagrees. Although the Takasu device may have a substrate 801, a N-type transistor and a resistive element 807, it does not disclose “an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements.” Instead, Takasu discloses an aluminum layer 814 which is deposited by a sputtering method over an intermediate insulating film 812, (Takasu, FIGS. 12E-F, col. 9, lines 38-50) and polysilicon resistors 807. (Takasu, col. 9, lines 28-52). The insulating film 812 having contact holes 813 is deposited over polysilicon resistors 807 and gate electrode 806. (Takasu, FIGS. 12D-F). Takasu does not disclose “bond pads” which are formed over the polysilicon resistors 807. As noted earlier, the claimed invention has several advantages including preventing contamination

of the resistive elements. Because Takasu does not disclose, teach or suggest all of the limitations of claim 1, Applicant respectfully submits that the 35 U.S.C. § 102(b) rejection of independent claim 1 and dependent claims 2-4 and 17 be withdrawn and the claims allowed.

Claim 3 depends from claim 1 and as such, includes all of the limitations of claim 1. It further recites “wherein the resistive elements include a plurality of resistors connected serially.”

As mentioned earlier, Takasu does not disclose, teach or suggest all of the limitations of claim 1. Further, Takasu does not disclose, teach or suggest “a plurality of resistors connected serially.” For these reasons, Applicant respectfully submits that the 35 U.S.C. § 102(b) rejection of claim 3 be withdrawn and the claim allowed.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodriguez in view of U.S. Publication No. 2002/0063262 (“Matsuzaki”). Applicant traverses the rejection.

Claim 7 ultimately depends from claim 1 and thus, includes the limitations of claim 1. As such, claim 7 recites, in part, “an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements.” As mentioned earlier, Rodriguez fails to teach these limitations.

Matsuzaki does not cure the deficiencies of Rodriguez. The Office Action relies on Matsuzaki to teach a rerouting layer formed in a region above the fuse element and an external connection terminal formed on the rerouting layer in a region different from a formation region of the electrode pad. (Office Action, pp.5-6). Because cited references, individually or in combination, fail to teach or suggest all of the elements of claim 7, Applicant respectfully requests the 35 U.S.C. § 103(a) rejection be withdrawn and claim 7 allowed.

Claims 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodriguez in view of U.S. Patent No. 6,232,823 ("Tsuchida"). Applicant traverses the rejection.

Claims 8-10 ultimately depend from claim 1 and thus, include the limitations of claim 1. As such, claims 8-10 recite, in part, "an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements." As mentioned earlier, Rodriguez fails to teach these limitations. Tsuchida does not cure the deficiencies of Rodriguez. The Office Action relies on Tsuchida to teach the additional limitations of claims 8-10. (Office Action, pp.6-7). Because cited references, individually or in combination, fail to teach or suggest all of the elements of claims 8-10, Applicant respectfully requests the 35 U.S.C. § 103(a) rejection be withdrawn and the claims allowed.

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodriguez in view of U.S. Patent No. 5,107,313 ("Kohda"). Applicant traverses the rejection.

Claim 18 ultimately depends from claim 1 and thus, includes the limitations of claim 1. As such, claim 18 recites, in part, "an electrode pad comprising a metal layer and formed over the semiconductor substrate, said electrode pad providing contact between said semiconductor apparatus and external circuitry; a MOS transistor formed over the semiconductor substrate; and a circuit formed over said semiconductor substrate and in a region under the electrode pad, said circuit comprising a plurality of resistive elements formed of a semiconductor material, said electrode pad being formed over said plurality of resistive elements." As mentioned earlier, Rodriguez fails to teach these limitations. Kohda does not cure the deficiencies of Rodriguez. The Office Action relies on Kohda to teach gate electrode having lengthwise ends which are bent in an upward direction towards said electrode pad. (Office Action, p.8). Because the cited references, individually or in combination, fail to teach or suggest all of the elements of claim 18, Applicant respectfully requests the 35 U.S.C. § 103(a) rejection be withdrawn and the claim allowed.

In view of the above, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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